Curriculum Vitae

Personal Details

- **Name**: Wang-Ji YAN
- **Gender**: Male
- **Nationality**: China
- **Language**: Chinese and English
- **E-mail:** wangjiyan@um.edu.mo
- **Current Position**: State Key Lab and Internet of Things for Smart Cities and Department of Civil and Environmental Engineering, University of Macau, Macau, China
- **Organization Address:** N21, State Key Lab of Internet of Things for Smart Cities.
- **Google Scholar: https://scholar.google.com/citations?user=5Z_6aeMAAAAJ&hl=zh-CN**

Education

- 08/2013: **Ph.D. in Structural Health Monitoring**
  - **The Hong Kong University of Science and Technology**, Hong Kong.
  - Supervisor: Prof. Lambros Katafygiotis
- 11/2008: **MPhil in Structural Health Monitoring**
  - **Central South University**, Hunan Province, China.
  - Supervisor: Prof. Wei-Xin Ren
- 06/2006: **Diploma in Civil Engineering**
  - **Central South University**, Hunan Province, China.

Research Interests

- Big Data Analytics for Structural Health Monitoring;
- Probabilistic Deep Learning for Intelligent Non-destructive Testing;
- Digital Twinning Technology for Structural Dynamical Systems;
- Bayesian Inference for Highly Complicated Problems;
- AI-empowered Uncertainty Quantification and Propagation;
- Statistical Signal Processing;
- Stochastic System Identification.

Research & Professional Experience

Research Experience

- 10/2019 – current**: Associate Professor**

State Key Lab and Internet of Things for Smart Cities and Department of Civil and Environmental Engineering, University of Macau, Macau, China

- 02/2018 – 09/2019**: European Marie Skłodowska-Curie Individual Fellow**

  The University of Nottingham, UK

- 12/2014 – current**: Tenured Full Professor (Yellow Mountain Youth Talents Program)**

  Hefei University of Technology, Anhui Province, China

- 09/2013 – 12/2014**: Postdoctoral Fellow**

  The Hong Kong University of Science and Technology, Hong Kong

Research Grants

- The Science and Technology Development Fund (FDCT) (0038/2024/RIB2), ***Theory and Key Technology of Distributed Parallel Intelligent Damage Diagnosis for Bridge Engineering Powered by Physical Properties of Long-gauge Strain Transmissibility***, PI, 2024.
- Research Committee of University of Macau (MYRG-GRG2024-00119-IOTSC), ***Bayesian Influence Line Identification based on a New Variational Inference Paradigm with Equivalent Neural Network Representation and Its Application to Probabilistic Online Damage Detection for Bridge Engineering***, PI, 2024.
- Research Committee of University of Macau (MYRG2022-00096-IOTSC), ***Unsupervised Damage Detection for Bridges Utilizing Statistical Property of Strain Transmissibility under Moving Vehicles and Novel Probabilistic Machine Learning Schemes***, PI, 2022.
- The Science and Technology Development Fund (FDCT) (0010/2021/AGJ), ***Key Technologies and Demonstration Application of Intelligent Health Monitoring and Maintenance Decision-Making for Bridges in Guangdong-Macao In-Depth Cooperation Zone in Hengqin***, PI, 2022.
- The Science and Technology Development Fund (FDCT) (0101/2021/A2), ***Probabilistic Machine Learning for Evolution Law Tracking and Intelligent Detection of Fatigue Damage for High-Speed Railway subjected to Multiple Uncertainties***, PI, 2022.
- The Science and Technology Development Fund (FDCT) (0017/2020/A1), ***Bayesian Time-Varying Approach for Modal Identification and Long-term Evolution Analysis for Bridges subject to Complex Operational Environments***, PI, 2020.
- The Science and Technology Development Fund (FDCT) (00094/2021/A2), ***Virtual Augmented Intelligent Sensing Network Configuration for Cyberphysical Structural Health Monitoring,*** co-PI., 2022.
- Research Committee of University of Macau (MYRG2020-00073-IOTSC), ***Intelligent Nondestructive Testing Technologies for Composite Structures based on Hierarchical Bayesian***

Learning Scheme and Advanced Modelling of Ultrasonic Wave Interaction with Nonlinear Damage, PI, 2022.

- Research Committee of University of Macau (SRG2019-00194-IOTSC), ***Overpressure Loading Modelling and Evolution Mechanism of Structural Dynamical Responses subjected to Hydrogen Explosion Disaster***, PI, 2020.
- National Natural Science Foundation of China (NSFC) (51778203), ***Uncertainty Quantification and Propagation in System Identification for Structural Health Monitoring based on the Probabilistic Model of Frequency Response Functions***, PI, 2018.
- European Research Council, Marie Skłodowska-Curie Individual Fellowship (741284), ***Advanced Modelling of Ultrasonic Wave Interaction with Damage for Enhanced Bayesian Failure Identification Technologies in Industrial Composite Structures,*** PI, 2018.
- Sub-subject of National Key Research and Development Program of China (2016YFE0113400), ***Structural Dynamical Response Propagation Mechanism due to the Hydrogen Explosion Venting-induced Natural Hazard***, PI, 2017.
- National Natural Science Foundation of China (NSFC) (51408176), ***Operational Modal Analysis for Bridge Engineering using the Statistics of Transmissibility Function***, PI, 2015.
- Fundamental Research Funds for the Central Universities of China (JZ2017HGTB0205), ***Big Data Analytic for Long-span Bridge Health Monitoring Considering Complex 'Environment-Structure-Traffic' Coupling Effect*****,** PI, 2016.
- Fundamental Research Funds for the Central Universities of China (407-037148), ***Structural Health Monitoring for Bridge Engineering Accommodating Multiple Uncertainties***, PI, 2015.

Fellowships and Awards

- EASD Junior Research Award in the area of Computational Structural Dynamics, European Association of Structural Dynamics, 2023.
- Macao Science and Technology Award (Natural Science Award), 2024.
- Distinguished Young Scholar Paper Award in 13th National Conference on Random Vibration Theory and Application, 2023.
- 2nd Class of Natural Science Award of Ministry of Education of China, 2023.
- 2nd Class of Natural Science Award of Chinese Association of Vibration Engineering, 2022.
- The Top 2% Scientists in The World, Stanford University.
- Marie Skłodowska-Curie Individual Fellowship, 2018-2020.
- HuangShan Young Scholar Professorship, 2014-2018.
- 2nd Class of Science and Technology Progress Award of Zhejiang Province, 2017.
- 2nd Class of Science and Technology Progress Award of Chinese Highway Association, 2017.
- Most Cited Articles, Journal of Mechanical System and Signal Processing.

- Most Cited Articles, Journal of Applied Mathematics and Mechanics.
- 1st Class of Academic Paper Contest of Anhui Province, 2016.
- 2nd Class of Natural Science Award of Anhui Province, 2015.
- HKUST Postdoctoral fellowship, 2013-2014.
- Outstanding Young Medal for Teaching and Education, Hefei University of Technology, 2017.
- 1st Class of Teaching Competition, Hefei University of Technology, 2016.
- Arup Research Prize (Certificate of Merit), awarded by Ove Arup & Partners Hong Kong Ltd, 2012.
- Finalist for Best Student Paper Award, by Structural Control and Health Monitoring Committee, Engineering Mechanics Institute, ASCE, 2012.
- Distinguished MPhil Dissertation Award, awarded by Central South University, 2010.
- 1st Class of Post-Graduate Academic Paper Contest, awarded by Central South University, 2008.
- 2nd Class of National Post-Graduate Mathematical Modeling Contest, awarded by the Ministry of Education of China, 2007.
- Distinguished Diploma Dissertation Award, awarded by Central South University, 2006.
- Outstanding Postgraduate Student Award, awarded by Central South University, 2009.
- 2nd Class of Undergraduate Mathematical Modeling Contest, awarded by the Hunan Province, 2005.
- 1st Class of National Scholarship, awarded by the Ministry of Education of China, 2004.
- Highest Class Scholarship (Top 5/530), awarded by Central South University, 2003-2005.
- Outstanding Undergraduate Student Award, awarded by Central South University, 2003-2004.

Publications

Books Chapters

1. **Wang-Ji Yan,** Lambros Katafygiotis, Costas Papadimitriou, **"Fast Bayesian Approach for Stochastic Model Updating Incorporating Modal Information from Multiple Setups**", book chapter in "***Bayesian Methods for the Analysis of Engineering Systems***", CRC Press Taylor & Francis Group.

Journal Papers

1. J Mo, **Wang-Ji Yan***, K V Yuen, M Beer (2025) Efficient non-probabilistic parallel model updating based on analytical correlation propagation formula and derivative-aware deep neural network metamodel. ***Computer Methods in Applied Mechanics and Engineering***, Vol.433, 117490. https://doi.org/10.1016/j.cma.2024.117490
2. JZ Zhan, **Wang-Ji Yan***, W Wu, KV Yuen, D Chronopoulos (2025) Two-stage fast Bayesian inference for rail model updating and crack detection with ultrasonic guided wave measurements and advanced wave propagation simulation. ***Journal of Sound and Vibration***, Vol.599, 118914.

https://doi.org/10.1016/j.jsv.2024.118914

3. LF Mei, **Wang-Ji Yan***, KV Yuen, Q Wang, H Wang (2025) Uncertainty-aware structural anomaly detection under varying environmental conditions based on Bayesian nonparametric density estimation-guided probabilistic damage index. ***ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering***. In press.
4. LF Mei, **Wang-Ji Yan***, KV Yuen, M Beer (2025): Streaming variational inference-empowered Bayesian nonparametric clustering for online structural damage detection with transmissibility function. ***Mechanical Systems and Signal Processing,*** Vol.221, 111767. https://doi.org/10.1016/j.ymssp.2024.111767
5. SH Liu, LZ Jiang, WB Zhou, **Wang-Ji Yan**, et al. (2025) Evaluation of post-seismic running limits of high-speed railways based on track surface seismic-induced irregularity. ***Engineering Structures,*** Vol.326, 119546. https://doi.org/10.1016/j.engstruct.2024.119546
6. **Wang-Ji Yan***, JZ Zhan, KV Yuen, WX Ren, C Papadimitriou (2024) PC-Kriging-powered parallelizing Bayesian updating for stochastic vehicle-track dynamical system with contact force measurements and Gaussian process discrepancy model. ***Engineering Structures***, Vol. 318, 118578. https://doi.org/10.1016/j.engstruct.2024.118578
7. J Mo, **Wang-Ji Yan*** (2024) StocIPNet: A novel probabilistic interpretable network with affine-embedded reparameterization layer for high-dimensional stochastic inverse problems. ***Mechanical Systems and Signal Processing,*** Vol.220, 111623. https://doi.org/10.1016/j.ymssp.2024.111623
8. TT Hao, **Wang-Ji Yan***, JB Chen, TT Sun, KV Yuen (2024) Multi-output multi-physics-informed neural network for learning dimension-reduced probability density evolution equation with unknown spatio-temporal-dependent coefficients. ***Mechanical Systems and Signal Processing,*** Vol.221, 111683. https://doi.org/10.1016/j.ymssp.2024.111683
9. YS Liu, **Wang-Ji Yan***, KV Yuen, WH Zhou (2024): Element-wise parallel learning for structural distributed damage detection by leveraging physical properties of long-gauge static strain transmissibility under moving loads, ***Mechanical Systems and Signal Processing,*** Vol.221, 111680. https://doi.org/10.1016/j.ymssp.2024.111680
10. MH Ping, XY Jia, C Papadimitriou, X Han, C Jiang, **Wang-Ji Yan*** (2024): A hierarchical Bayesian modeling framework for identification of Non-Gaussian processes. ***Mechanical Systems and Signal Processing,*** Vol.208,110968. https://doi.org/10.1016/j.ymssp.2023.110968
11. P. Yuen, KV Yuen, M Beer, CS Cai, **Wang-Ji Yan** (2024) A non-iterative partitioned computational method with the energy conservation property for time-variant dynamic systems. ***Mechanical Systems and Signal Processing,*** Vol.209, 111105. https://doi.org/10.1016/j.ymssp.2023.110830
12. WJ Zhang, KV Yuen, **Wang-Ji Yan** (2024) Active learning aided Bayesian nonparametric general

regression for model updating using modal data. ***Mechanical Systems and Signal Processing,*** Vol. 204, 110830. https://doi.org/10.1016/j.ymssp.2023.110830

13. WJ Zhang, KV Yuen, **Wang-Ji Yan** (2024) Two-stage nonparametric framework for missing data imputation, uncertainty quantification, and incorporation in system identification. ***Computer-Aided Civil and Infrastructure Engineering***, 13237. https://doi.org/10.1111/mice.13237
14. LF Qin, WX Ren, **Wang-Ji Yan** (2024) Sensitive properties of power spectral density Transmissibility (PSDT) to moving vehicles and structural states in bridge health monitoring. ***Structural Control and Health Monitoring***, 2024(1), 4695910. https://doi.org/10.1155/2024/4695910
15. Z Feng, J Zhang, X Xuan, Y Wang, X Hua, Z Chen, **Wang-Ji Yan** (2024) Bayesian time domain approach for damping identification and uncertainty quantification in stay cables using free vibration response. ***Engineering Structures***, Vol.315, 118477. https://doi.org/10.1111/mice.13237
16. L Zhang, ZC Wang, Q Wei, RY Li, ZD Zhou, **Wang-Ji Yan**, et al. (2024) A novel fiber Bragg grating-based smart clamp with macro strain measurement: design, modeling, and application to incipient looseness detection. ***Structural Health Monitoring***, 14759217241245303. https://doi.org/10.1002/tal.1297
17. ZC Wang, PX Gao, ZD Zhou, AS Tijsseling, YZ Qu, **Wang-Ji Yan**, et al. (2024) A numerically stable flexural dynamics model of complex multi-span fluid-conveying pipes with flexible components and its application to clamp stiffness identification. ***Thin-Walled Structures***, 111488. https://doi.org/10.1002/tal.1297
18. SH Li, LZ Jiang, WB Zhou, **Wang-Ji Yan**, et al. (2024) Study on the equivalent coefficients of seismic-induced track dynamic irregularities based on post-seismic running performance. ***Structures***, Vol.68, 107225. https://doi.org/10.1016/j.istruc.2024.107225
19. LF Mei, **Wang-Ji Yan***, KV Yuen, WX Ren, M Beer (2023) Transmissibility-based damage detection with hierarchical clustering enhanced by multivariate probabilistic distance accommodating uncertainty and correlation. ***Mechanical Systems and Signal Processing,*** Vol.202, 11072. https://10.1016/j.ymssp.2023.110702
20. XA Yan, **Wang-Ji Yan**, YD Xu, KV Yuen (2023) Multi-sensor fault diagnosis based on adaptive multivariate feature mode decomposition and multi-attention fusion residual convolutional neural network. ***Mechanical Systems and Signal Processing,*** Vol.202, 110664. https://10.1016/j.ymssp.2023.110664
21. ZC Wang, **Wang-Ji Yan***, KV Yuen (2023) A transfer matrix method-based closed-form solution of sensitivities of dynamic properties and FRF for multi-span pipes under complex boundary conditions. ***Mechanical Systems and Signal Processing,*** Vol.198, 110428. https://doi.org/10.1016/j.ymssp.2023.110428
22. XY Jia, **Wang-Ji Yan***, C Papadimitriou, KV Yuen (2023) An analytically tractable solution for

hierarchical Bayesian model updating with variational inference scheme. ***Mechanical Systems and Signal Processing,*** Vol. 189, 110060. https://doi.org/10.1016/j.ymssp.2022.110060

23. J Mo, **Wang-Ji Yan***, KV Yuen, Michael Beer (2023) Efficient inner-outer decoupling scheme for non-probabilistic model updating with high dimensional model representation and Chebyshev approximation. ***Mechanical Systems and Signal Processing,*** Vol.188, 110040. https://doi.org/10.1016/j.ymssp.2022.110040
24. Q Sun, **Wang-Ji Yan***, WX Ren, et al. (2023) Quantification of statistical error in the estimate of strain power spectral density transmissibility for operational strain modal analysis. ***Structural Control and Health Monitoring,*** 2023(1), 6661720. https://www.hindawi.com/journals/schm/2023/6661720/
25. MH Ping, XY Jia, C Papadimitriou, X Han, C Jiang, **Wang-Ji Yan** (2023) A hierarchical Bayesian framework embedded with an improved orthogonal series expansion for Gaussian processes and fields identification. ***Mechanical Systems and Signal Processing,*** Vol.187, 109933. https://doi.org/10.1016/j.ymssp.2022.109933
26. ZC Wang, YZ Qu, **Wang-Ji Yan**, KV Yuen, et al., (2023) Transfer matrix method-based dynamic model to compensate the pulsating pressure in Strain-based nonintrusive pressure measurement for the L-shaped pipe. ***Measurements: Journal of the International Measurement Confederation***, Vol. 218, 113149. https://doi.org/10.1016/j.measurement.2023.113149
27. Q Sun, C Rainieri, WX Ren, **Wang-Ji Yan**, G Fabbrocino (2023) Automated operational modal analysis of bell towers subjected to narrowband input, ***Structures***. Vol.54, 78-88. https://doi.org/10.1177/14759217231152434
28. KV Yuen, WJ Zhang, **Wang-Ji Yan** (2023) Bayesian nonparametric general regression with adaptive kernel bandwidth and its application to seismic attenuation. ***Advanced Engineering Informatics***, Vol.55, 101859. https://doi.org/10.1016/j.aei.2022.101859
29. YC Zhu, S Cantero-Chinchilla, H Meng, **Wang-Ji Yan**, D Chronopoulos (2023) Damage detection, quantification and localization for resonant metamaterials using physics-based and data-driven methods, ***Structural Health Monitoring***, 14759217231152434. https://doi.org/10.1177/14759217231152434
30. W Wu, S Cantero-Chinchilla, **Wang-Ji Yan**, M Chiachio Ruano, et al. (2023) Damage quantification and identification in structural joints through ultrasonic guided wave-based features and an inverse Bayesian scheme. ***Sensors***, Vol.23(8), 4160. https://doi.org/10.3390/s23084160
31. **Wang-Ji Yan***, TT Hao, KV Yuen, C Papadimitriou (2022) Monitoring gross vehicle weight with a probabilistic and influence line-free bridge weight-In-motion scheme based on a transmissibility-like index. ***Mechanical Systems and Signal Processing***, Vol.177, 109133. https://doi.org/10.1016/j.ymssp.2022.109133
32. KV Yuen*, YS Liu, **Wang-Ji Yan*** (2022) Estimation of time-varying noise parameters for

unscented Kalman filter. ***Mechanical Systems and Signal Processing***, Vol.180, 109439. https://doi.org/10.1016/j.ymssp.2022.109439

33. **Wang-Ji Yan***, ZQ Feng, W Yang, KV Yuen (2022) Bayesian inference for the dynamic properties of long-span bridges under vortex-induced vibration with Scanlan's model and dense optical flow scheme. ***Mechanical Systems and Signal Processing***, Vol.174, 109078. https://doi.org/10.1016/j.ymssp.2022.109078
34. **Wang-Ji Yan***, D Chronopoulos, KV Yuen, YC Zhu (2022) Structural anomaly detection based on probabilistic distance measures of transmissibility function and statistical threshold selection scheme, ***Mechanical Systems and Signal Processing***, Vol.162, 108009. https://doi.org/10.1016/j.ymssp.2021.108009
35. LF Mei, **Wang-Ji Yan***, KV Yuen, M Beer (2022) Structural novelty detection Based on Laplace asymptotic expansion of the Bhattacharyya distance of transmissibility function and Bayesian resampling scheme. ***Journal of Sound and Vibration***, Vol.540, 117277. https://doi.org/10.1016/j.jsv.2022.117277
36. XA Yan, **Wang-Ji Yan***, KV Yuen, Z Yang, XB Wang (2022) An adaptive variational mode extraction method based on multi-domain and multi-objective optimization for bearing fault diagnosis. ***Structural Health Monitoring***, 14759217221133283. https://doi.org/10.1177/147592172211332
37. ZW Chen*, L Zhao, **Wang-Ji Yan***, KV Yuen, C Wu (2022) A statistical influence line identification method using Bayesian regularization and a polynomial interpolating function. ***Structural Control and Health Monitoring,*** e3080. https://doi.org/10.1002/stc.3080
38. S Cantero-Chinchilla, AT Fabro, H Men, **Wang-Ji Yan**, et al., (2022) Robust optimised design of 3D printed elastic metastructures: A trade-off between complexity and vibration attenuation. ***Journal of Sound and Vibration***, 116896. https://doi.org/10.1016/j.jsv.2022.116896
39. W Wu, MK Malik, S Cantero-Chinchilla, T Lawrie, **Wang-Ji Yan**, et al. (2022) Guided waves-based damage identification in plates through an inverse Bayesian process. ***Ultrasonics***, 106773. https://doi.org/10.1016/j.ultras.2022.106773
40. ZW Chen, XZ Ruan, KM Liu, **Wang-Ji Yan**, JT Liu (2022) Fully automated natural frequency identification based on deep-learning-enhanced computer vision and Power Spectral Density Transmissibility, ***Advance in Structural Engineering***, 13694332221107572. https://www.worldscientific.com/doi/abs/10.1142/S0219455421500681
41. **Wang-Ji Yan***, SZ Cao, WX Ren, KV Yuen, et al. (2021) Vectorization and distributed parallelization of Bayesian model updating based on a multivariate complex-valued probabilistic model, ***Mechanical Systems and Signal Processing***, Vol.156, 107615. https://doi.org/10.1016/j.ymssp.2021.107615
42. MY Zhao, **Wang-Ji Yan***, KV Yuen, M Beer (2021) Non-Probabilistic uncertainty quantification for

dynamic characterization functions using complex ratio interval arithmetic operation of multidimensional parallelepiped model, ***Mechanical Systems and Signal Processing***, Vol.156, 107559. https://doi.org/10.1016/j.ymssp.2020.107559

43. TT Hao, CJ Wang, **Wang-Ji Yan***, WX Ren, KV Yuen (2021): Experimental investigation on the dynamic responses of vented hydrogen explosion in a 40-foot container. ***International Journal of Hydrogen Energy***, Vol.46 (36), 19229-19243. https://doi.org/10.1016/j.ijhydene.2021.03.066
44. Q Sun, **Wang-Ji Yan**, WX Ren (2021) Analytical investigation into error propagation of power spectral density transmissibility (PSDT) based on coherence function. ***Journal of Sound and Vibration***, Vol.514, 116429. https://doi.org/10.1016/j.jsv.2021.116429
45. ZC Wang, MY Liu, **Wang-Ji Yan***, et al. (2021) A model-driven scheme to compensate the strain-based non-intrusive dynamic pressure measurement for hydraulic pipe. ***IEEE Transactions on Instrumentation and Measurement,*** Vol.70, 1-12. https://ieeexplore.ieee.org/abstract/document/9609983
46. ZW Chen, KM Liu, **Wang-Ji Yan**, WX Ren (2021) Two-stage automated operational modal analysis based on power spectrum density transmissibility and support vector machines, ***International Journal of Stability and Dynamics,*** Vol.21(05), 2150068**.** https://www.worldscientific.com/doi/abs/10.1142/S0219455421500681
47. **Wang-Ji Yan***, D Chronopoulos, S Cantero-Chinchilla, KV Yuen, C Papadimitriou (2020) A fast Bayesian inference scheme for identification of local structural properties of layered composites based on wave and finite element-assisted metamodeling strategy and ultrasound measurements. ***Mechanical Systems and Signal Processing***, Vol.143, 106802. https://doi.org/10.1016/j.ymssp.2020.106802
48. **Wang-Ji Yan***, MY Zhao, M Beer, WX Ren, D Chronopoulos (2020) A unified scheme to solving arbitrary complex-valued ratio distribution with application to statistical inference for frequency response functions and transmissibility functions, ***Mechanical Systems and Signal Processing***, Vol.143, 106802. https://doi.org/10.1016/j.ymssp.2020.106886
49. **Wang-Ji Yan***, C Papadimitriou, LS Katafygiotis, D Chronopoulos (2020) An analytical perspective on Bayesian uncertainty quantification and propagation in mode shape assembly. ***Mechanical Systems and Signal Processing***, Vol.135, 106376. https://doi.org/10.1016/j.ymssp.2019.106376
50. **Wang-Ji Yan***, KV Yuen (2020) A new probabilistic frequency-domain approach for influence line extraction from static transmissibility measurements under unknown moving loads, ***Engineering Structures***, Vol.468, 115083. https://doi.org/10.1016/j.engstruct.2020.110625
51. **Wang-Ji Yan***, D Chronopoulos, C Papadimitriou, S Cantero-Chinchilla (2020) Bayesian inference for damage identification based on analytical probabilistic model of scattering coefficient estimators and ultrafast wave scattering simulation scheme. ***Journal of Sound and Vibration***, Vol.468, 115083.

https://doi.org/10.1016/j.jsv.2019.115083

52. D Li, Y Wang, **Wang-Ji Yan**, WX Ren (2020) Acoustic emission wave classification for rail crack monitoring based on synchrosqueezed wavelet transform and multi-branch convolutional neural network, ***Structural Health Monitoring***, 1475921720922797. https://doi.org/10.1177/1475921720922797
53. LZ Jiang, J Yu, W Zhou, **Wang-Ji Yan**, et al. (2020) Applicability analysis of high-speed railway system under the action of near-fault ground motion, ***Soil Dynamics and Earthquake Engineering***, Vol.139, 106289. https://doi.org/10.1016/j.soildyn.2020.106289
54. **Wang-Ji Yan*,** MY Zhao, Q Sun, WX Ren (2019) Transmissibility-based system identification for structural health monitoring: Fundamentals, approaches and applications. ***Mechanical Systems and Signal Processing***, Vol.117, 453-482. https://doi.org/10.1016/j.ymssp.2018.06.053
55. **Wang-Ji Yan***, L Yang, X Yang, WX Ren (2019) Statistical modeling for fast Fourier transform coefficients of operational vibration measurements with non-Gaussianity using complex-valued t distribution. ***Mechanical Systems and Signal Processing***, Vol.132, 293-314. https://doi.org/10.1016/j.ymssp.2019.06.006
56. **Wang-Ji Yan***, L Katafygiotis (2019) An analytical investigation into the propagation properties of uncertainty in a two-stage fast Bayesian spectral density approach for ambient modal analysis. ***Mechanical Systems and Signal Processing***, Vol.118, 503-533. https://doi.org/10.1016/j.ymssp.2018.08.047
57. **Wang-Ji Yan**, WX Ren (2019) Two notes on circularly-symmetric complex normal ratio distribution for scalar transmissibility functions. ***Mechanical Systems and Signal Processing***, Vol.133. 106285. https://doi.org/10.1016/j.ymssp.2019.106285
58. Q Sun, **Wang-Ji Yan,** WX Ren (2019) Application of transmissibility measurements to operational modal analysis of railway, highway, and pedestrian cable-stayed bridges, ***Measurements: Journal of the International Measurement Confederation***, Vol.148, 106880. https://doi.org/10.1016/j.measurement.2019.106880
59. **Wang-Ji Yan**, WX Ren (2018) Generalized proper complex Gaussian ratio distribution and its application to statistical inference for frequency response functions. ***Journal of Engineering Mechanics***, ***ASCE***, Vol.144(9), 04018080. https://doi.org/10.1061/(ASCE)EM.1943-7889.0001504
60. **Wang-Ji Yan**, WX Ren (2018) Circularly-symmetric complex normal ratio distribution for scalar transmissibility functions. **Part III**: Application to statistical modal analysis. ***Mechanical Systems and Signal Processing,*** Vol.98, 1000-1019. https://doi.org/10.1016/j.ymssp.2017.05.029
61. **Wang-Ji Yan**, HP Wan, WX Ren (2017) Analytical local and global sensitivity of power spectrum density functions for structures subject to stochastic excitation. ***Computers and Structures***, Vol.182, 325-336. https://doi.org/10.1016/j.compstruc.2016.12.005

62. **Wang-Ji Yan**, WX Ren (2017) Commentary discussion of 'Numerical methods for evaluating the sensitivity of element modal strain energy'. ***Finite Elements in Analysis and Design,*** Vol.137, 40-42. https://doi.org/10.1016/j.finel.2017.09.001
63. WB Zhou, **Wang-Ji Yan*** (2017) Refined nonlinear finite element modelling towards ultimate bending moment calculation for concrete composite beams under negative moment. ***Thin-walled Structures***, Vol.116, 201-211. https://doi.org/10.1016/j.tws.2017.02.011
64. C Chronopoulos, R Droz, M Apalowo, Ichchou, **Wang-Ji Yan** (2017) Accurate structural identification for layered composite structures, through a wave and finite element scheme. ***Composite Structures***, Vol.182, 566-578. https://doi.org/10.1016/j.compstruct.2017.09.062
65. **Wang-Ji Yan**, WX Ren (2016) Circularly-symmetric complex normal ratio distribution for scalar transmissibility functions. **Part II**: Probabilistic models and validation. ***Mechanical Systems and Signal Processing,*** Vol.80, 78-98. https://doi.org/10.1016/j.ymssp.2016.02.068
66. **Wang-Ji Yan**, WX Ren (2016) Circularly-symmetric complex normal ratio distribution for scalar transmissibility functions. **Part I**: Fundamentals. ***Mechanical Systems and Signal Processing***, Vol. 80, 58-77. https://doi.org/10.1016/j.ymssp.2016.02.052
67. **Wang-Ji Yan***, L Katafygiotis (2016) Application of transmissibility matrix and random matrix to Bayesian system identification with response measurements only. ***Smart Materials and Structures***, 25, 105017. https://doi.org/10.1088/0964-1726/25/10/105017
68. **Wang-Ji Yan**, ZQ Feng, WX Ren (2016) New insights into coherence analysis with a view towards extracting structural natural frequencies under operational conditions. ***Measurement: Journal of the International Measurement Confederation***, Vol.77, 187-202. https://doi.org/10.1016/j.measurement.2015.08.038
69. WB Zhou, SJ Li, **Wang-Ji Yan*** (2016) Practical formulas towards distortional buckling failure analysis for steel-concrete composite beams. ***Structural Design of Tall and Special Buildings***, Vol.25(18),1055-1072. https://doi.org/10.1002/tal.1297
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International Conference Proceedings

1. Meng-Yun Zhao, **Wang-Ji Yan,** Wei-Xin Ren and Mchical Beer. Probabilistic modelling for frequency response functions and transmissibility functions with complex ratio statistics, ***29th European Safety and Reliability Conference***, Hannover, Germany, 22 - 26 September 2019.
2. **Wang-Ji Yan,** Dimitrios Chronopoulos, Structural anomaly detection based on probabilistic metric distance of transmissibility functions, ***8th IOMAC-International Operational Modal Analysis Conference***, Copenhagen, Denmark, 13th-15th May 2019.
3. **Wang-Ji Yan**, Dimitrios Chronopoulos, Costas Papadimitriou, Sergio Cantero-Chinchilla, Guo-Shu Zhu, Bayesian damage characterization based on probabilistic model of scattering coefficients and hybrid wave finite element model scheme, ***7th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering*,** Crete, Greece, 24-26 June 2019.
4. Meng-Yun Zhao, **Wang-Ji Yan*** and Wei-Xin Ren. On the computation of probability density function of transmissibility function utilizing an efficient numerical method, ***7th World Conference***

on Structural Control and Monitoring, Qingdao, China, July 22-25, 2018.

5. Lin-bo Cao, Qian Sun, **Wang-Ji Yan*** and Wei-Xin Ren. Operational modal parameter identification of bridge based on power spectrum density transmissibility, ***7th World Conference on Structural Control and Monitoring***, Qingdao, China, July 22-25, 2018.
6. **Wang-Ji Yan***, Long Yang, Wei-Xin Ren. Application of new theorems on ratio statistics to transmissibility analysis in modal domain, ***12th International Conference on Structural Safety & Reliability***, TU Wien Vienna, Austria, 6-10 August, 2017.
7. **Wang-Ji Yan*,** Qian Sun and Wei-Xin Ren. Power Spectral Density Transmissibility (PSDT): An effective tool towards operational modal analysis insensitive to natural excitation, ***24th Australian Conference on the Mechanics of Structures and Materials***, Perth, Australia, 6-9 December, 2016.
8. **Wang-Ji Yan*** and Wei-Xin Ren. A new theorem on multivariate statistics and its application in uncertainty quantification for transmissibility, ***Sixth Asian-Pacific Symposium on Structural Reliability and its Applications***, Shanghai, 28-30 May, 2016**.**
9. **Wang-Ji Yan*** and Lambros Katafygiotis. Explicit closed-form approximation for uncertainty behavior of operational modal analysis: correlation and parametric analysis, ***International Symposium on Symposium on Reliability of Engineering System (SRES2015)***, Hangzhou, China, 15 -17 October, 2015.
10. **Wang-Ji Yan*** and Lambros Katafygiotis. A variable separation technique for fast Bayesian operational modal analysis in the frequency domain, ***13th International Symposium on Structural Engineering,*** Hefei, China, 24 -27 October, 2014.
11. **Wang-Ji Yan*** and Lambros Katafygiotis. Fast Bayesian approach for ambient modal analysis and model updating: Experimental studies using wireless sensors, ***9th International Conference on Structural Dynamics****,* Porto, Portugal, 30 June-2 July, 2014**.**
12. **Wang-Ji Yan*** and Lambros Katafygiotis. Decentralized Bayesian substructuring damage detection approach using nonstationary response measurements, ***11th International Conference on Structural Safety & Reliability****,* New York, USA, 16-20 June, 2013**.**
13. **Wang-Ji Yan*** and Lambros Katafygiotis. Incomplete modal data-based structural model updating accommodating multiple uncertainties by employing wireless sensor network, ***11th International Conference on Structural Safety & Reliability****,* New York, USA,16-20 June, 2013**.**
14. **Wang-Ji Yan*** and Lambros Katafygiotis. Mode shape assembly for ambient modal analysis using a two-stage Bayesian spectral density approach, ***4th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering***, Kos Island, Greece, 12-14 June, 2013**.**
15. **Wang-Ji Yan*** and Lambros Katafygiotis. A two-stage Bayesian approach for ambient modal analysis using wireless sensor: case of closely spaced modes, ***Joint Conference of the Engineering Mechanics Institute and 11th ASCE Joint Specialty Conference on Probabilistic Mechanics and***

Structural Reliability, Notre Dame, 17-20 June, 2012.

16. **Wang-Ji Yan*** and Lambros Katafygiotis. A two-stage Bayesian approach for ambient modal analysis using wireless sensor: case of separated modes, ***Fifth Asian-Pacific Symposium on Structural Reliability and its Applications***, Singapore, 22-25 May, 2012**.**
17. **Wang-Ji Yan** and Wei-Xin Ren*. Sensitivity study of modal strain energy for structural damage detection, ***2nd International Conference on Structural Condition Assessment, Monitoring and Improvement (SCAMI-2)***, Changsha, 19-22 November, 2007**.**

Professional Services

- Editorial board member, ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering;
- Editorial board member, ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering;
- Advisory board member, Machine Learning for Computational Science and Engineering (Springer);
- Associate editor, Frontiers in Built Environment;
- Associate editor, Digital Engineering and Digital Twin;
- Editorial board member, Structural Durability & Health Monitoring;
- Technical Committee Member, XIII International Conference on Structural Dynamics (EURODYN), Hannover, Germany, 2026;
- Technical Committee Member, 9th International Symposium on Reliability Engineering and Risk Management, Hefei, China, 2024;
- Technical Committee Member, The 13th National Conference on Random Vibration Theory and Application, Dalian, China, 2022;
- Technical Committee Member, 8th International Symposium on Reliability Engineering and Risk Management, Hannover, Germany, 2022;
- Technical Committee Member, European Safety and Reliability Conference, Hannover, Germany, 2019;
- Technical Committee Member, Technical Modal Analysis Committee of China;
- Technical Committee Member, Association for Stochastic Vibration Analysis Committee of China;
- Technical Committee Member, Chinese Young Association for Structural Control and Monitoring;
- Reviewer, National Science and Reviewer Technology Awards;
- Research Fund Reviewer, National Natural Science Foundation of China;
- Research Fund Reviewer, China Postdoctoral Fellowship Foundation;
- PhD Thesis Reviewer, China Academic Degrees & Graduate Education Development Center;
- MPhil Thesis Reviewer, China Academic Degrees & Graduate Education Development Center;
- Jury member in the ASCE ISG UMCEE 13th Structure Design Contest;

- Member, Engineering Mechanics Institute, American Society of Civil Engineers;
- Member, Chinese Society for Vibration Engineering;
- Reviewer for More Than 60 Journals.

Chairs and Invited Talks

- Keynote speech, ***Structural System Identification in Complex Service Environments Based on Transfer Ratio Functions: Characteristics, Methods, and Applications***, The 6th Jiangsu Province Engineer Association Wind Engineering Academic Conference and International Forum on Monitoring and Controlling Wind Effects on Nearshore Structures, Nantong, November 10, 2024.
- Invited talk, ***AI4UQ: Artificial Intelligence for Uncertainty Quantification in System Identification***, The 10th National Conference on Structural Vibration Control and Health Monitoring, Xiamen, November 1-3, 2024.
- Invited talk, ***AI4UQ: Artificial Intelligence for Uncertainty Quantification in Forward and Inverse Problems of Structural Dynamics***, The 12th Cross-Strait University Faculty and Student Seminar on Monitoring and Controlling Civil Engineering, Hangzhou, August 8-10, 2024.
- Invited talk, ***Exploring Some New Bayesian Learning Schemes for Enhanced Structural Model Updating and Damage Detection***, The 4th International Conference on Vulnerability and Risk Analysis and Management (ICVRAM 2024), April 25-28, 2024, Shanghai, China
- Invited talk, ***Transmissibility-based System Identification and Structural Health Monitoring for Structures under Complicated Operational Conditions"***, The 9th National Conference on Structural Vibration Control and Health Monitoring, Changsha, July 25, 2023.
- Invited talk, ***Fast Bayesian Model Updating with Advanced Stochastic Simulation, Metamodeling and Distributed Parallelization Strategies***, The 8th International Conference on Vibration Engineering, Shanghai, July 25, 2021.
- Invited talk, ***Structural Health Monitoring based on Transmissibility Function subject to Complicated Environmental and Operational Variability,*** The 13th National Conference on Random Vibration Theory and Application, Dalian, March 25, 2023.
- Invited talk, ***Transmissibility-based structural parameter identification for engineering structures subjected to random vibration: theory, practice, and application***, The 12th National Conference on Stochastic Vibration Theory and Application and the 9th National Conference on Stochastic Dynamics, Chongqing, November 28-31, 2020.
- Invited talk, ***Bayesian Inference for Damage Identification based on Ultrafast Wave Scattering Modelling-Assisted Stochastic Simulation Scheme***, The University of Nottingham, September 14, 2019.
- Invited talk, ***Uncertainty Characterization for Frequency Responses and its Application to Uncertainty Quantification & Propagation in Bayesian System Identification***, International

Workshop on Data Science in Civil Engineering, June 06, 2019.

- Invited short talk, ***New Challenges of Uncertainty Quantification for Structural System Identification in the Era of Big Data***, The First Academic Seminar for Civil Engineering Young Scholar, TongJi University, December 15-17, 2017.
- Invited talk at Xiamen University, ***Circularly-Symmetric Complex Normal Ratio Distribution for Transmissibility Functions***, The 6th Cross-Strait University Faculty and Student Seminar on Monitoring and Controlling Civil Engineering, Xiamen, August 13-17, 2015.
- Chair, session of '***Structural Health Monitoring for Civil Infrastructure***', The 12th Cross-Strait University Faculty and Student Seminar on Monitoring and Controlling Civil Engineering, Hangzhou, August 8-10, 2024.
- Chair, session of '***Advanced Concepts for Uncertainty Quantification and Reliability Analysis in Structural Dynamics***', The First International Conference on Engineering Structures (ICES2024), Guangzhou, November 9, 2024.
- Chair, session of '***Digital Infrastructure***', The 10th National Conference on Structural Vibration Control and Health Monitoring, Xiamen, November 1-3, 2024.
- Chair, session of '***Bayesian Inference for System Identification and Structural Health Monitoring***', The 4th International Conference on Vulnerability and Risk Analysis and Management (ICVRAM 2024), April 25-28, 2024, Shanghai, China.
- Chair, session of '***Bayesian Inference for Structural Health Monitoring***', SVCHM-2023, Changsha, China, 12-14 May 2023.
- Chair, session of '***Vehicle load identification, Bridge weight-in-motion and Overload monitoring***', Changsha, China, 12-15 April 2023.
- Chair, session of '***Uncertainty Modelling, Quantification & Propagation in System Identification & Structural Damage Detection***', ICOSSAR-2022, Shanghai, China, 13-16 September 2022.
- Chair of the session '***System Reliability***', 29th European Safety and Reliability Conference, Hannover, Germany, 22 - 26 September 2019.
- Chair of the session '***Stochastic Mechanics and Structural Reliability***', *EMI International Conference*, *ASCE*, Shanghai, 2-4 November, 2018.
- Chair of the session '***System Identification and Structural Health Monitoring***', *Fifth Asian-Pacific Symposium on Structural Reliability and its Applications*, Singapore, 22-25 May, 2012.

End